A NEW SPECIES OF THE NEOTROPICAL GENUS *BYTHONIA* (HOMOPTERA: CICADELLIDAE) AND THE FEMALE OF *B. CONSENSA*[1]

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ABSTRACT: *Bythonia ferruginea*, new species, is described from the states of Bahia and Minas Gerais, Brazil. The female of *B. consensa* is described for the first time based on specimens from the states of Rio de Janeiro (new record) and Espírito Santo, Brazil. The presence of two sclerotized plates from the sternum VIII is reported in females of *Bythonia* for the first time. Notes on specimens of *B. kalypso* from the Brazilian states of Santa Catarina (new record) and Minas Gerais are added. A map showing the known distribution of the species of *Bythonia* is also presented.

Three species of the Neotropical genus *Bythonia* Oman were recorded by Blocker and Webb (1990). Only a few specimens of this genus were cited in the literature. *B. rugosa* (Osborn, 1923), the type-species, is known only from the female holotype from Bolivia and a male from Peru (Linnavuori 1959). This species was originally described in the genus *Nionia* Ball. *B. kalypso* Linnavuori, 1959 and *B. consensa* Blocker and Webb, 1990 were, until the present paper, known only from their male holotypes from Brazil. The affinities of *Bythonia* to other leafhopper genera were briefly discussed by Blocker and Webb (1990), who assigned this genus to the subfamily Iassinae. The original description by Oman (1936) and subsequent descriptions by Linnavuori (1959) and Blocker and Webb (1990) should be consulted for characteristics of the genus.

A new species of *Bythonia* from the states of Bahia and Minas Gerais, Brazil, is herein described. The previously unknown female of *B.consensa* is described for the first time. This species is newly recorded from the state of Rio de Janeiro, Brazil. Notes on six additional male specimens of *B. kalypso* Linnavuori are added and the species is newly recorded from the state of Santa Catarina, Brazil.

Acronyms for collections in which the specimens herein studied are deposited are as follows: DZRJ (Departamento de Zoologia, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil), MNRJ (Museu Nacional, Rio de Janeiro), and NHM (The Natural History Museum, London). In quotations of label data, a virgule (/) separates lines on a label and a semicolon separates information on different labels. Morphological terminology follows mainly

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Young (1977). The software package FishMap (Buckup 1995) was used for producing a distribution map of the species of *Bythonia.*

Bythonia ferruginea, NEW SPECIES

(Figs. 1-7)

Diagnosis. – Males of *B. ferruginea* can be distinguished from the other known species of the genus by the following features: pronotum with arrow-shaped group of irregular black spots; sternum VIII with anterior and posterior acute processes on lateral margins; pygofer without processes, ventrolateral portion with longitudinal fold; basal half of styles with blunt dorsal process; aedeagus with pair of lateral processes on apical third and without median spine on apodeme.

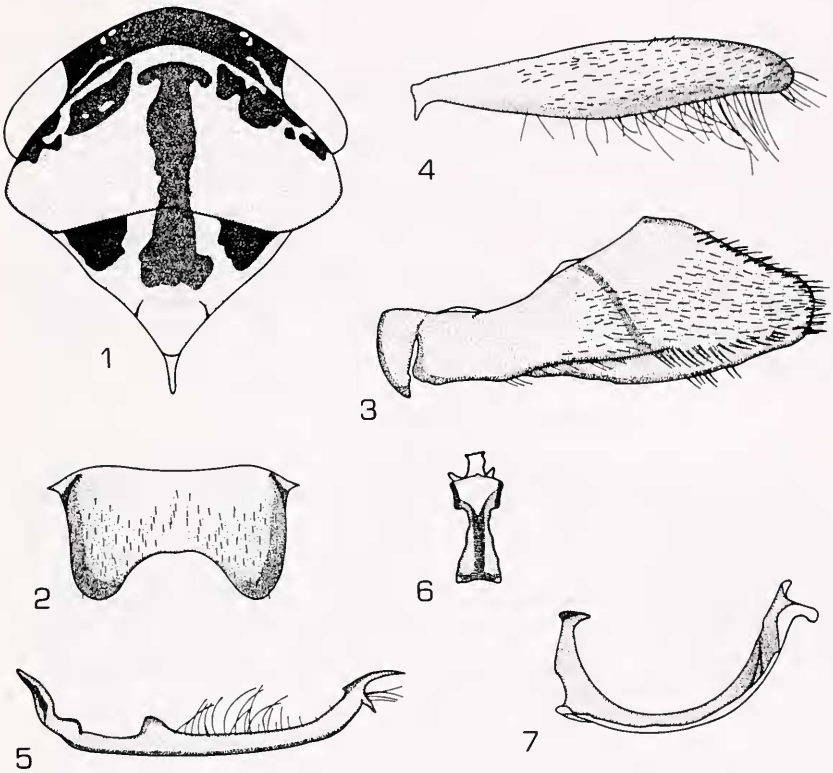
Description of male. – Length including forewings, 6.3-6.8 mm. Head (Fig. 1) short, median length of crown approximately one-eighth interocular width, anterior margin rounded; surface of crown with small punctures; face with pubescence; clypeus with inconspicuous muscle impressions; clypellus in lateral view forming angle at transition with clypeus; antennal ledges slightly protuberant; lora broad, slightly striate; genae with deep excavation below eyes. Thorax (Fig. 1) with pronotal width approximately equal to transocular width of head; disc of pronotum with pubescence, transversely striate; dorsopleural carinae complete; mesonotum transversely striate. Forewings with clavus and adjacent regions of corium punctate. Legs pubescent. Abdominal sternum VIII (Fig. 2) broad in ventral view, lateral margins with anterior and posterior small acute processes, posterior margin broadly concave, ventral surface with microsetae uniformly dispersed. Remaining morphological characteristics of head and thorax as in the original generic description of Oman (1936: 358) and the subsequent description of Linnavuori (1959: 13).

Color. – Reddish-brown marked with black. Crown (Fig. 1) almost entirely black; ocelli yellowish. Pronotum (Fig. 1) with arrow-shaped group of irregular black spots; mesonotum (Fig. 1) with pair of subtriangular black maculae on anterior portion and median black stripe continuous with pronotal arrow-shaped mark. Forewings hyaline, with irregular amber areas. Hindwings hyaline. Clypeus and clypellus with median black stripe narrowing toward inferior portion; lora with blackish spot. Legs with blackish markings.

Male genitalia. – Pygofer (Fig. 3) elongate in lateral view, with apex rounded, ventrolateral portion with longitudinal fold, apical half of disc with numerous microsetae, apical margin with macrosetae extending anteriorly along one-third of ventral and dorsal margins. Subgenital plates (Fig. 4) in lateral view elongate, extending posteriorly beyond apex of pygofer, median portion slightly enlarged, apex rounded, plates with dispersed microsetae. Styles (Fig. 5) in lateral view with apical portion curved dorsally, bifurcate, C-shaped, with short triangular process and small group of long microsetae, dorsal margin with long microsetae, basal half with dorsal blunt process. Connective (Fig. 6) in dorsal view with very short, dorsally curved arms, dorsal area of stalk with median keel. Aedeagus (Fig. 7) curved dorsally in lateral view, with apical digitiform process, distal third with pair of thin lateral processes; aedeagal apodeme well developed, apex bifurcate.

Female unknown.

Known distribution. – Brazilian states of Bahia and Minas Gerais (Fig. 14). The two known records of *B. ferruginea* are included in areas originally covered by the Brazilian Atlantic Forest (see map in Warren 1996).



Figs. 1-7. *Bythonia ferruginea*, new species, male. 1, Head and thorax, dorsal view. 2, Abdominal sternum VIII, ventral view. 3, Pygofer, lateral view. 4, Subgenital plate, lateral view. 5, Style, lateral view. 6, Connective, dorsal view. 7, Aedeagus, lateral view.

Etymology. – The species epithet *ferruginea*, is of Latin derivation and refers to the reddish-brown color of its anterior dorsum.

Type material. – Holotype: Male, Brazil, "Encruzilhada-BA [state of Bahia, 15° 31' S, 40° 54' W]/ XI-1972/ Alvarenga/ 960 m", MNRJ. Paratypes: Two males, same data as holotype, MNRJ and DZRJ; three males, Brazil, "Pedra Azul/ Minas [state of Minas Gerais, 16° 00' S, 41° 17' W], Brasil; Seabra &/ Oliveira/ XI-72", MNRJ.

Notes. – The color pattern in *B. ferruginea* is very similar to that of *B. consensa* (see description below). The anterior dorsum (Fig. 1) in both species is reddish-brown with black markings and the face has a median black stripe. In terms of morphology, the sternum VIII and male genitalia of *B. ferruginea*

are also similar to those of *B. consensa*. The sternum VIII (Fig. 2) in the new species presents an anterior and a posterior pair of lateral processes, while in *B. consensa* only a single median pair of processes is present. The pygofer (Fig. 3) in *B. ferruginea* has a ventrolateral longitudinal fold, a feature that is not observed in *B. consensa*. On the other hand, the ventral margin of the pygofer in the latter species has a bifurcate process which is not present in the former. The apical portion of the styles (Fig. 5) in both species is curved dorsally and bifurcate, but the basal half of this structure in *B. ferruginea* has a blunt projection which does not occur in *B. consensa*. The aedeagus (Fig. 7) in these species is curved dorsally and bears a pair of lateral processes. These processes are longer in *B. ferruginea*. The aedeagal apodeme in *B. consensa* has a spine that is not present in *B. ferruginea*.

Bythonia consensa Blocker and Webb

(Figs. 8-13)

Description of female.– Length including forewings, 7.6 mm. Morphological characteristics of head and thorax as in *B. ferruginea*, new species, and also as in the generic descriptions of Oman (1936: 358) and Linnavuori (1959: 13) and the original specific description of Blocker and Webb (1990: 294).

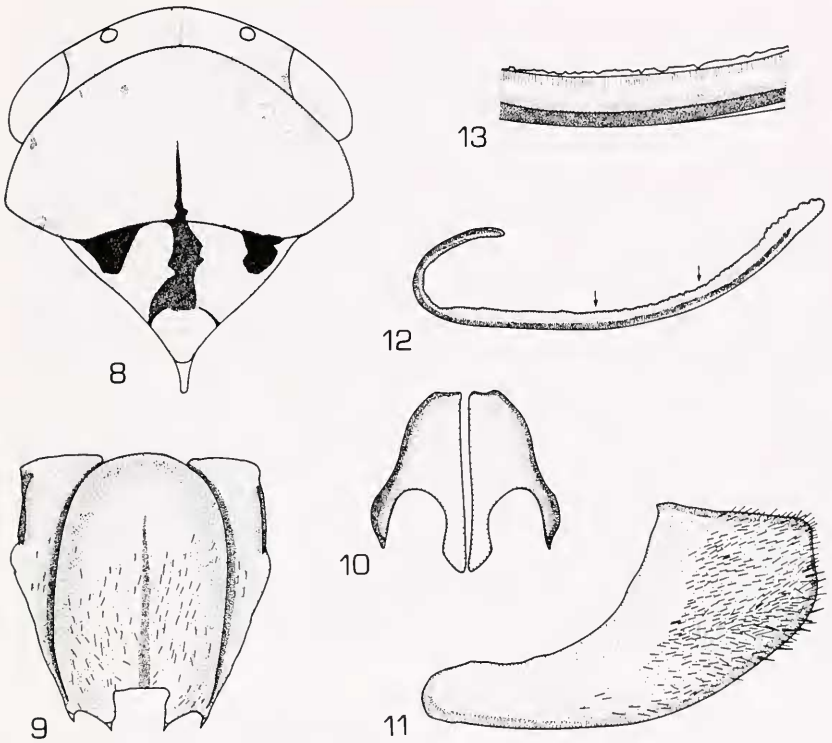
Color. – Reddish-brown marked with black, ocelli yellowish. Pronotum (Fig. 8) with small blackish areas and faint, longitudinal blackish-brown stripe on median portion; mesonotum (Fig. 8) with pair of black maculae on anterior portion and faint, longitudinal blackish-brown stripe on median portion continuous with pronotum stripe, extending to transverse sulcus. Forewings reddish-brown with apex amber. Hindwings hyaline. Clypellus with small black maculae on central portion. Legs with blackish areas.

Female genitalia.– Abdominal sternum VII (Fig. 9) narrowed posteriorly, ventral surface strongly convex, with microsetae uniformly distributed, lateral margins without processes, posterior margin shallowly emarginate on each side of median quadrangular concavity, lateral margins of emarginations with spiniform processes. Sternum VIII (Fig. 10) well developed, sclerotized, formed in dorsal view by pair of plates, each with deep posterior concavity. Pygofer (Fig. 11) elongate in lateral view, with apex truncate, apical half with microsetae uniformly distributed, ventroapical portion with small group of macrosetae. Ovipositor with first valvulae long and narrow, apex blunt, dorsal and ventral sculptured areas with sinuate and almost vertically aligned striae; second valvulae (Fig. 12) slightly expanded apically, without preapical prominence, apex blunt, apical portion with broad, rectangular, sloping teeth, median portion (Fig. 13) with small irregular denticles.

Known distribution. – *B. consensa* was originally described by Blocker and Webb (1990) from the state of Espírito Santo. This species is herein newly recorded from the state of Rio de Janeiro (Fig. 14). The known records of *B. consensa* are included in areas originally covered by the Atlantic Forest.

Material examined. – One female, two males, Brazil, "Angra dos Reis [state of Rio de Janeiro, 23° 00' S, 44° 19' W]/ Japuhyba/ 2-1944/ Wygodzinsky L.; MNRJ", MNRJ. Two females, Brazil, "Corrego Itâ [Córrego Itá]/ E. Santo. [state of Espírito Santo] Br./ X-1954/ W. Zikan", MNRJ. Male holotype, "Tijuco Preto/ Esp. Santo [state of Espírito Santo, 20° 17' S, 40° 53' W]; Holotype/ *Bythonia consensa*/ Blocker + Webb/ 1990", NHM.

Notes. – The two above-mentioned males of *B. consensa* from the state of



Figs. 8-13. *Bythonia consensa*, female. 8, Head and thorax, dorsal view. 9, Sternum VII, ventral view. 10, Sternum VIII, dorsal view. 11, Pygofer, lateral view. 12, Second valvula of ovipositor, lateral view. 13, Area between arrows in figure 12 at a higher magnification, lateral view.

Rio de Janeiro were identified using the original description of Blocker and Webb (1990) and through the examination of the species' male holotype in the NHM. The reddish-brown color of the anterior dorsum of the females of *B. consensa* is similar to that of the males. However, the latter have a longitudinal black stripe on clypeus and blackish areas on crown and anterior portion of pronotum that are not observed in the females. *B. rugosa* is the only other species in the genus *Bythonia* for which the female has been described. *B. consensa* can be distinguished from *B. rugosa* by the form of the sternum VII. In the former species this sternum (Fig. 9) does not have processes on lateral margins and a quadrangular concavity is present on posterior margin, while in the latter species it has a pair of lateral spiniform processes and a posterior trapezoidal process (see Blocker and Webb 1990).

Females of *B. consensa* present two sclerotized plates at the base of the ovipositor dorsad of the sternum VII (Fig. 10). These plates, which are here reported in the genus *Bythonia* for the first time, are homologous to those described by Nielson (1965) in the proconiine genus *Cuerna* Melichar and to the sclerites of the genital chamber described by Young (1977) in several cicadelline genera. They are derived from the sternum VIII, which is greatly reduced in females of cicadellids (Nielson 1965, Mejdalani in press). Nielson (1965) demonstrated that this modified sternum can provide useful characteristics for distinguishing species in *Cuerna*. Comparative studies on females of *Bythonia* are necessary in order to know if the sternum VIII is also of taxonomic value in this genus. The sternum VIII in *B. consensa* is similar to the derived type of modified sternum described by Nielson (1965) in *Cuerna*, which is characterized by the presence of two distinct plates.

The first and second valvulae of the ovipositor of *B. consensa* are very similar to those of *B. rugosa*. The valvulae of the latter species were described by Hill (1970). The dorsal sculptured area of the first valvulae presents in both species sinuate, almost vertically aligned striae. These striae differ greatly from the alveolate sculpturing found in other Iassinae (see Hill 1970, Dietrich 1993). The shaft of the second valvulae in *B. consensa* (Fig. 12) and *B. rugosa*, unlike those of other Iassinae (see Hill 1970), does not present dorsal tooth-like prominences. The apical portion of these valvulae is slightly expanded and bears teeth in both species.

Bythonia kalypso Linnavuori

B. kalypso was described from a single male from the state of Minas Gerais (Linnavuori 1959: 15). We have identified five additional male specimens of this species from Minas Gerais in the MNRJ collection; one male specimen from the Brazilian state of Santa Catarina was identified in the NHM collection (Fig. 14). This is the first record of *B. kalypso* from Santa Catarina. This species also occurs in areas of Atlantic Forest. In terms of color and morphology, these specimens agree fairly well with the original description of the species. However, they are slightly smaller (7.5-8 mm) than the holotype (9 mm). Males of this species can be recognized by the following characteristics: pygofer with a triangular projection on median portion of ventral margin; apex of styles acute; apex of aedeagus with an acute process directed anteriorly and a blunt, weekly sclerotized process directed dorsally. The holotype of *B. kalypso* is reportedly deposited in the Hungarian Natural History Museum but could not be located in that collection (Blocker and Webb 1990).

Material examined. – Five males, Brazil, "Pedra Azul/ Minas [state of Minas Gerais, 16° 00' S, 41° 17' W], Brasil; Seabra &/ Oliveira/ XI-72; MNRJ", MNRJ. One male, Brazil, "Coleção/ Campos Seabra; Corupá/ S. Catarina [state of Santa Catarina, 26° 25' S, 49° 14' W] Brasil/ I-1954/ A. Maller", NHM.

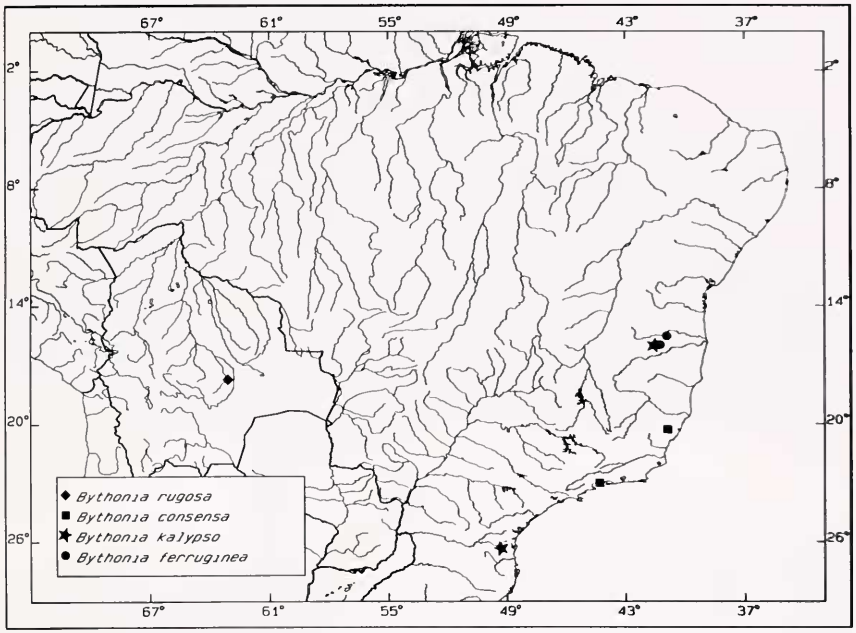


Fig. 14. Known geographic distribution of the species of the South American genus *Bythonia*. *B. rugosa* was also recorded from an unknown locality in Peru by Linnavuori (1959).

ACKNOWLEDGMENTS

The manuscript benefited from the useful comments of A. L. Carvalho, L. B. N. Coelho, L. F. M. Dorvillé, M. W. Nielson, S. A. Vanin, M. D. Webb, and two anonymous reviewers. This work was finished during a visit of GM to the NHM. Working facilities in that museum arranged by M. D. Webb, J. Margerison-Knight, and J. Martin are greatly acknowledged. Fellowships from Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES, Brazil) to MF and from Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP, Brazil) to GM are acknowledged.

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BOOKS RECEIVED AND BRIEFLY NOTED

BUTTERFLY CONSERVATION. (Second ed.) T.R. New. 1998. Oxford Univ. Press. 248 pp. $27.95 paperback).

This book provides a broad survey of the science of insect and butterfly conservation and the rationale for conserving both. Most of the book explores butterfly conservation and international efforts to safeguard species, including steps individuals can take to encourage and document butterfly conservation.

TERMITES. BIOLOGY AND PEST MANAGEMENT. M.J. Pearce. 1998. Oxford Univ. Press. 172 pp. 32 plates. $65.00 (cloth).

This book provides a general scientific introduction to termites, including their biology, behavior, pest status, and control. It is directed to advanced students in entomology and pest management, as well as to professionals.

A FIELD GUIDE TO COMMON TEXAS INSECTS. B.M. Drees & J.A. Jackman. 1998. Gulf Publishing Co., Houston, TX. 359 pp. 381 color photos on 64 plates. $18.95 (paper).

A regional field guide describing insects, mainly by order and family, and, in the larger orders, by genus, with specific examples.